IN THE CLAIMS:

Applicants respectfully request that the claims be amended as follows.

1. (Currently amended) A wireless transceiver for performing ultrasonic measurements, said wireless transceiver comprising:

an uplink transmitter configured to transmit at least one modulated timing pulse signal, each modulated timing pulse signal being transmitted over a respective uplink wireless channel, wherein the modulated timing pulse signal comprises a timing pulse signal modulated using an uplink carrier signal;

at least one uplink receiver, each uplink receiver being adapted to receive a respective one of the modulated timing pulse signals from said uplink transmitter and being configured to supply an unmodulated timing pulse signal to a respective transducer;

at least one downlink transmitter, each downlink transmitter being adapted to receive an echo signal from the respective transducer, and being configured to extract envelope information from the echo signal and to transmit a modulated echo signal over a respective downlink wireless channel, wherein the modulated echo signal is modulated using a downlink carrier signal; and

a downlink receiver adapted to receive the modulated echo signals, each modulated echo signal being received from said respective downlink transmitter.

2. (Currently amended) The wireless transceiver of Claim 1, wherein said uplink transmitter includes:

a logic level timing pulse ("LLTP") generator configured to generate [[a]] the timing pulse signal, and

at least one uplink modulator, each uplink modulator being configured to modulate the timing pulse signal using the uplink carrier signal to produce the respective modulated timing pulse signal.

3. (Original) The wireless transceiver of Claim 2, wherein said LLTP generator includes:

an uplink limiter configured to rectify an input signal to produce a rectified signal;

a filter configured to smooth the rectified signal to produce a smooth signal; and

a buffer and amplification unit configured to condition the smooth signal to produce a logic level pulse signal.

4. (Original) The wireless transceiver of Claim 3, wherein:
said uplink limiter includes a diode clipping circuit, and
said filter is a low pass filter and includes a capacitor.

5. (Original) The wireless transceiver of Claim 4, wherein said buffer and amplification unit includes a comparator.

6. (Original) The wireless transceiver of Claim 3, wherein said LLTP generator further includes a synchronizing unit configured to control an on-off cycle of the logic level pulse signal to supply the timing pulse signal.

7. (Original) The wireless transceiver of Claim 6, wherein said synchronizing unit includes a bistable logic device.

8. (Original) The wireless transceiver of Claim 6, wherein said uplink transmitter further includes a pulse signal generator for supplying the input signal.

9. (Original) The wireless transceiver of Claim 8, wherein said pulse signal generator includes a pulser amplifier, and wherein said uplink transmitter further includes an attenuator configured to reduce an amplitude of the input signal.

10. (Original) The wireless transceiver of Claim 2, wherein each uplink receiver includes:

a timing pulse signal receiver adapted to receive the respective modulated timing pulse signal from said uplink transmitter over the respective uplink wireless channel;

an uplink demodulator configured to demodulate the respective modulated timing pulse signal to produce a demodulated timing pulse signal; and

a tone burst generator configured to convert the demodulated timing pulse signal to a drive tone signal.

11. (Original) The wireless transceiver of Claim 10, wherein:
said timing pulse signal receiver includes an antenna; and

said tone burst generator includes:

a tone burst signal generator for supplying a tone burst signal, and

a gate for syncronizing the tone burst signal on the demodulated timing pulse signal.

12. (Currently amended) The wireless transceiver of Claim 11, wherein the tone burst signal has a frequency in a range of ~~about~~ 10 kHz to ~~about~~ 100 kHz.

13. (Original) The wireless transceiver of Claim 10, wherein each uplink receiver further includes a tone burst amplification unit configured to amplify the drive tone signal to supply an amplified drive tone signal.

14. (Original) The wireless transceiver of Claim 13, wherein each uplink receiver further includes a step-up transformer configured to step up the amplified drive tone signal to supply a stepped up drive signal to the respective transducer.

15. (Original) The wireless transceiver of Claim 13, wherein each uplink receiver further includes a diplexer configured to turn said tone burst amplification unit on and off.

16. (Original) The wireless transceiver of Claim 15, wherein said diplexer includes a series diode pair.

17. (Currently amended) The wireless transceiver of Claim 10, wherein each downlink transmitter includes:

a downlink limiter configured to limit an echo signal produced by the respective transducer to supply a limited echo signal;

an envelope information extractor configured to extract the envelope information from the limited echo signal to supply an envelope information signal; and

a downlink modulator configured to modulate the envelope information signal <u>using the downlink carrier signal</u> to supply the respective modulated echo signal.

18. (Original) The wireless transceiver of Claim 17, wherein said envelope information extractor includes:

an echo amplifier configured to amplify the limited echo signal to supply an amplified echo signal,

an echo mixer configured to mix the amplified echo signal with an envelope signal to supply a mixed echo signal, and

an echo capacitor configured to filter the mixed echo signal to supply the envelope information signal.

19. (Original) The wireless transceiver of Claim 18, wherein said downlink limiter includes a resistive element and a pair of back-to-back connected diodes.

20. (Original) The wireless transceiver of Claim 17, wherein said downlink receiver includes:

at least one echo signal receiver, each echo signal receiver being adapted to receive the respective modulated echo signal from said respective downlink transmitter over the respective downlink wireless channel;

at least one downlink demodulator, each downlink demodulator being configured to demodulate the respective modulated echo signal to supply a respective demodulated echo signal,

wherein said downlink receiver is adapted to supply the demodulated echo signals to a processing unit.

21. (Original) The wireless transceiver of Claim 20, wherein said downlink receiver further includes:

an end amplification unit configured to amplify each respective demodulated echo signal to supply a respective amplified demodulated echo signal,

wherein said downlink receiver is adapted to supply the amplified demodulated echo signals to the processing unit.

22. (Original) The wireless transceiver of Claim 21, wherein said downlink receiver further includes:

an isolation coupler for relaying the amplified demodulated echo signals to the processing unit.

23. (Original) The wireless transceiver of Claim 22, wherein said isolation coupler includes a 1-1 transformer.

24. (Original) The wireless transceiver of Claim 20, wherein each echo signal receiver includes an antenna.

25. (Original) The wireless transceiver of Claim 20, wherein:

each uplink modulator and each respective downlink modulator are configured to employ one of AM, FM, FSK, and CPSK modulation, and

each uplink demodulator and each respective downlink demodulator are configured to employ one of AM, FM, FSK, and CPSK demodulation.

26. (Currently amended) The wireless transceiver of Claim 25, wherein:

each uplink modulator includes:

an uplink carrier signal source for supplying [[an]] the uplink carrier signal, and

a first uplink mixer configured to mix the uplink carrier signal and the timing pulse signal to supply the respective modulated timing pulse signal, and

each respective uplink demodulator includes:

an uplink signal generator for supplying an uplink demodulating signal, and

a second uplink mixer configured to mix the uplink demodulating signal and the respective modulated timing pulse signal to supply the respective demodulated timing pulse signal.

27. (Original) The wireless transceiver of Claim 26, wherein the uplink carrier signal and the first demodulating signal have an uplink frequency in the ISM band.

28. (Currently amended) The wireless transceiver of Claim 26, wherein:

each downlink modulator includes:

a downlink carrier signal source for supplying [[a]] the downlink carrier signal, and

a first downlink mixer configured to mix the downlink carrier signal and the respective envelope information signal to supply the respective modulated echo signal,

each respective downlink demodulator includes:

a downlink signal generator for supplying a downlink demodulating signal, and

a second downlink mixer configured to mix the downlink demodulating signal and the respective modulated echo signal to supply the respective demodulated echo signal.

29. (Original) The wireless transceiver of Claim 28, wherein:

the uplink carrier signal and the uplink demodulating signal have an uplink frequency in the ISM band, and

the downlink carrier signal and the downlink demodulating signal have a downlink frequency in the ISM band.

30. (Original) The wireless transceiver of Claim 17, wherein said downlink receiver includes:

an echo signal receiver adapted to receive the modulated echo signals from said downlink transmitters over the downlink wireless channels;

a tunable downlink demodulator configured to demodulate the modulated echo signals to supply a plurality of demodulated echo signals,

wherein said downlink receiver is adapted to supply the demodulated echo signals to a processing unit.

31. (Original) The wireless transceiver of Claim 30, wherein said tunable downlink demodulator includes:

a tunable oscillator configured to supply a plurality of downlink carrier signals; and

a mixer configured to mix each of the modulated echo signals with a respective one of the downlink carrier signals to supply a plurality of demodulated echo signals.

32. (Original) The wireless transceiver of Claim 31, wherein the downlink carrier signals are in the ISM band.

33. (Original) The wireless transceiver of Claim 31, wherein said downlink receiver further includes:

an end amplification unit configured to amplify the demodulated echo signals to supply a plurality of amplified demodulated echo signals,

wherein said downlink receiver is adapted to supply the amplified demodulated echo signals to the processing unit.

34. (Original) The wireless transceiver of Claim 31, wherein said echo signal receiver includes an antenna.

35. (Currently amended) A wireless ultrasonic measurement system comprising:

a plurality of transducers for supplying a plurality of echo signals;

an uplink transmitter configured to transmit a plurality of modulated timing pulse signals over a plurality of uplink wireless channels, one uplink wireless channel being provided for each transducer, and each modulated timing pulse signal being transmitted over a respective one of the uplink wireless channels, wherein each of the modulated timing pulse signals comprises a respective timing pulse signal modulated using an uplink carrier signal;

a plurality of uplink receivers, each uplink receiver being adapted to receive a respective one of the modulated timing pulse signals from said uplink transmitter and being configured to supply a respective unmodulated timing pulse signal to a respective one of said transducers;

a plurality of downlink transmitters, each downlink transmitter being adapted to receive an echo signal from a respective one of said transducers and being configured to extract envelope information from the echo signal, and to transmit a respective modulated echo signal over a respective downlink wireless channel, wherein each of the modulated echo signals is modulated using a downlink carrier signal; and

a downlink receiver adapted to receive the modulated echo signals from said downlink transmitters and to supply a plurality of demodulated echo signals to a processing unit.

36. (Currently amended) A method for performing ultrasonic, wireless measurements, said method comprising:

transmitting at least one modulated timing pulse signal, each modulated timing pulse signal being transmitted over a respective uplink wireless

channel, wherein the at least one modulated timing pulse signal comprises a timing pulse signal modulated using an uplink carrier signal;

receiving the modulated timing pulse signal over the uplink wireless channel and supplying a respective demodulated timing pulse signal to a respective transducer;

receiving an echo signal from the respective transducer, extracting an envelope information signal from the echo signal, and transmitting a respective modulated echo signal over a respective downlink channel, wherein the modulated echo signal is modulated using a downlink carrier signal; and

receiving the modulated echo signal and supplying a respective demodulated echo signal to a processing unit.

37. (Currently amended) The method of Claim 36 further comprising:

modulating a timing pulse signal using the uplink carrier signal to supply the modulated timing pulse signal;

demodulating the modulated timing pulse signal to supply the respective demodulated timing pulse signal;

modulating the envelope information signal to supply the respective modulated echo signal; and

demodulating the modulated echo signal using the downlink carrier signal to supply the respective demodulated echo signal,

wherein said modulation steps and said demodulation steps employ one of AM, FM, FSK, and CPSK modulation and demodulation, respectively.

38. (Currently amended) The method of Claim 37, wherein said timing pulse modulation and demodulation steps employ [[an]] the uplink carrier signal in an ISM band, and wherein said echo signal modulation and demodulation steps employ [[a]] the downlink carrier signal in the ISM band.